WHAT IS CLAIMED IS:

1. A circuit arrangement comprising:

a complementary pass transistor logic;

a static driver connected to the complementary pass transistor logic and driving complementary input nodes to each other of the complementary pass transistor logic by a low swing voltage; and

a charge recycling circuit connected to the complementary pass transistor logic and performing charge sharing between the complementary input nodes when the complementary pass transistor logic is not driven by the static driver.

2. The circuit arrangement as claimed in claim 1, wherein a swing level of the low swing voltage ranges from a ground voltage level to a supply voltage level minus a threshold voltage level.

3. The circuit arrangement as claimed in claim 1, the static driver is formed of a plurality of transistors connected in series.

4. A low swing charge recycling circuit

arrangement comprising:

a complementary pass gate stage having driving inputs to receive each of driving input signals, having complementary outputs to produce an output signal on one hand and a complementary output signal on the other and determining a logic operation of the circuit arrangement;

a static low swing driver stage having a signal input to receive an input signal, having a clock input to receive a clock signal, and having complementary outputs to produce low swing complementary signals to each output to be provided to the driving inputs of the complementary pass gate when the clock signal is in one of two states; and

an equalization stage being connected to the complementary outputs, having a clock input to receive the clock signal and producing complementary signals to the driving inputs of the complementary pass gate stage when the clock signal is in the other state, whereby a charge shared signal of an intermediate voltage level between those of the complementary outputs is shared between the driving inputs.

5. An adder comprising:

a carry propagating circuit for alternatively propagating low swing driven complementary carry input signals and charge sharing complementary carry input signals;

a static low swing driver circuit receiving generate signals and producing low swing driven complementary generate signals;

a pass gate network receiving the complementary carry input signals, the complementary generate signals and propagate signals and being

controlled by the propagate signals for producing a sum signal by applying XOR operation to the complementary carry signals with the propagate signals;

an equalization circuit adapted to be operative alternatively with the static low swing driver circuit and providing charge sharing complementary generate signals to the pass gate network; and

a latch circuit connected to the pass gate network and latching the produced sum signal.

6. An adder module comprising:

at least one adder connected in series, each adder being provided on the basis of one bit to be added; and

a carry input signal equalization circuit receiving carry input signals and providing charge sharing complementary carry input signals to one end of the adders connected in series,

wherein the adder includes:

a carry propagating circuit for alternatively propagating low swing driven complementary carry input signals and the charge sharing complementary carry input signals;

a static low swing driver circuit receiving generate signals and producing low swing driven complementary generate signals;

a pass gate network receiving the complementary carry input signals, the complementary generate signals and propagate signals and being controlled by the propagate signals for producing a sum signal by applying XOR operation to the complementary carry signals with the propagate signals;

an equalization circuit adapted to be operative alternatively with the static low swing driver

circuit and providing charge sharing complementary generate signals to the pass gate network; and

a latch circuit connected to the pass gate network and latching the produced sum signal.

7. The adder module as claimed in claim 6 further comprising:

a carry propagating path for propagating the complementary carry input signals in series of bits;

a carry skip path bypassing the adders connected in series in order to pass the complementary carry input signals transparently; and

a carry conflict-free circuit for protecting a conflict of the propagated carry input signals and the passed carry input signals.